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ABSTRACT

This key is designed to help identify the most common trees found in Iowa. It is based on vegetative characteristics such as leaves, fruits, and bark and is illustrated with black and white line drawings. Since vegetative characteristics vary due to climate, age, soil fertility, and other conditions, the numerical sizes listed, such as length and width of the leaves, are only a general guide. Definitions of terms appear before the key. An index of tree names is appended. (YLB)

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KEY for TREES OF IOWA

Hickory | Oak (State tree) | Basswood | Maple | Cottonwood

Willow

CE016120

Horsechestnut

Cooperative Extension Service
Iowa State University
Ames, Iowa 50011

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INTRODUCTION

This key was developed to help identify the most common trees found in Iowa. The key is based on vegetative characteristics such as leaves, fruits, and bark. In the true sense, this key is neither complete nor without the chance of making errors.

The proper use of the key may be compared to the use of road signs where a choice of two directions must be made at each intersection. One must always chose the best route which matches the characteristics of the tree. If at the end, the solution does not match the specimen, one can usually identify a point in the process where the choice of direction was in doubt. Many times the steps can be retraced to this point and the sample can be identified.

The vegetative characteristics of trees are quite variable. These variations may be partly due to climate, age, soil fertility and other conditions. Therefore, the numerical sizes listed, such as length and width of the leaves, are only a general guide.

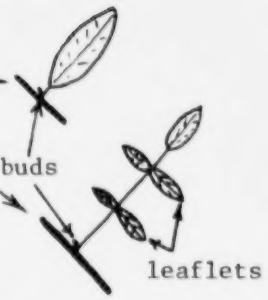
It is not a complete key; it does not include all trees grown in Iowa. More advanced students will have available to them more complete dendrology books or keys. These may be used to help in proper identification of trees in Iowa.

Prepared by Kim D. Coder, Assistant Extension Forester, and Paul H. Wray, Extension Forester.
Artwork by Sue Mellerup.

Definitions of special terms for identification

simple leaf = leaves have one blade

compound leaf = leaves have several individual leaflets



palmately compound -

pinnately compound -

doubly pinnately compound -

opposite leaves =

alternate leaves =

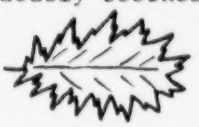
leaf margin types =

smooth

lobed

toothed

doubly toothed



lobed and toothed

leaf petioles =

vein crotches =

lobe sinuses =

sharp

or

rounded

samaras = any kind of small winged seed

pith =

twig cross-section

single samaras

double samaras

KEY TO THE TREES OF IOWA

SHELTERBELT AND FOREST TREES

NEEDLE, AWL, OR SCALE-LIKE LEAVES (conifers)

BROADLEAVES (deciduous)

NEEDLES

SCALES OR AWL-LIKE

page 1-A

scale

awl

COMPOUND LEAF

SIMPLE LEAF

-to next page (iv)

NEEDLES OCCUR SINGLY

NEEDLES IN MULTIPLE BUNDLES OR TUFTS

page 2

OPPOSITE LEAVES

page 4-A

ALTERNATE LEAVES

NEEDLES ARE ROUND OR SQUARE IN CROSS-SECTION AND OCCUR ON RAISED PEGS ON THE TWIGS. NEEDLES ARE STIFF AND SHARP POINTED. CONES HANG FROM THE TWIGS.

page 3

NEEDLES ARE FLAT, NOT STALKED, AND HAVE A ROUND OR BLUNT TIP. CONES ARE UPRIGHT.

page 1-B

TWIGS ARMED WITH THORNS OR SPINES

page 4-B

TWIGS UNARMED

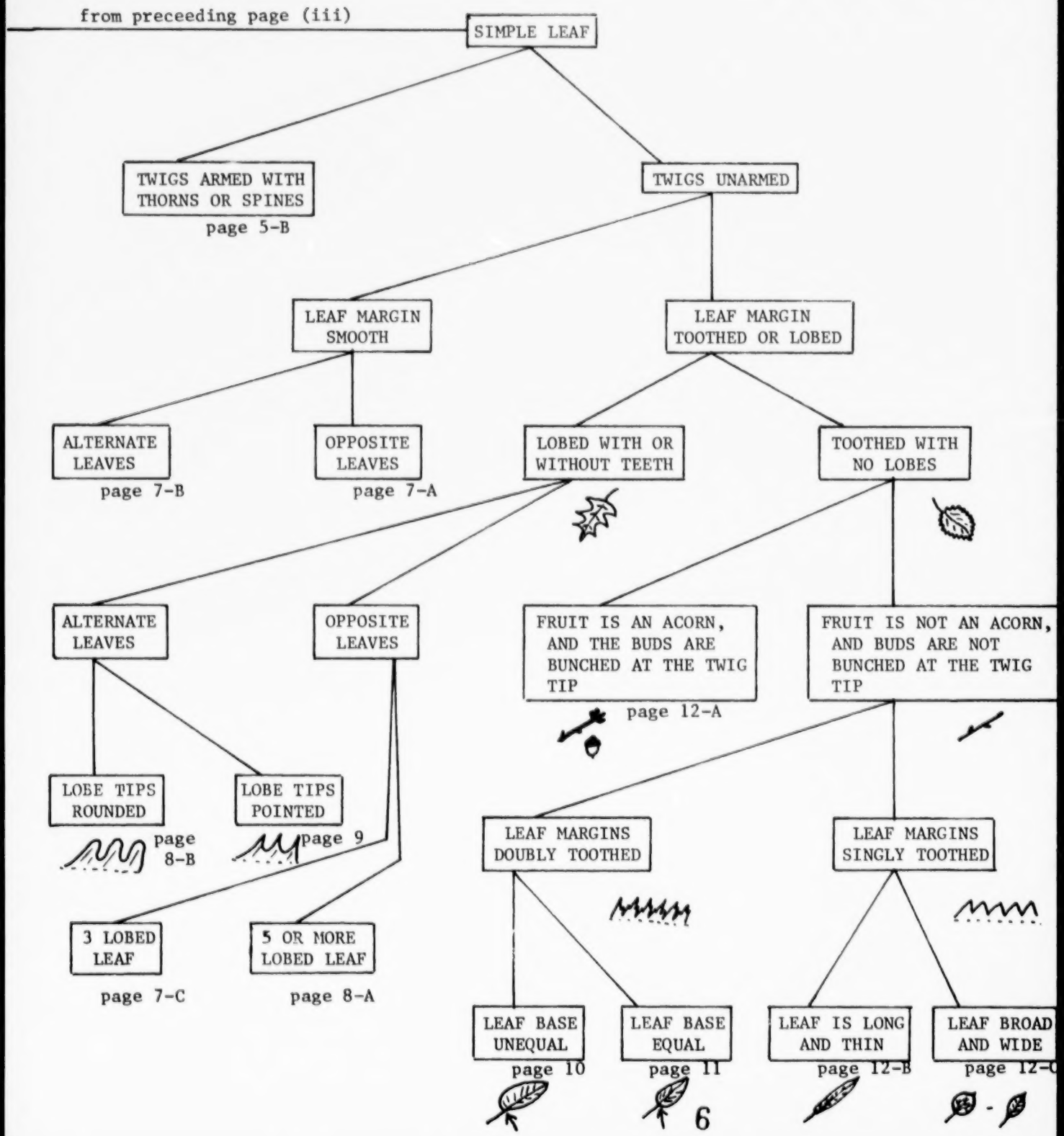
LEAF MARGIN SMOOTH

page 5-A

LEAF MARGIN TOOTHED

page 6

from preceeding page (iii)



PART A

needles are scales or sharp awl shaped

leaves are flattened and only of the scale type; cones have 4-6 scales; foliage is light green.
Thuja occidentalis
Northern White Cedar

cone

leaves occur as awl-shaped scales and/or rounded scales.

leaves are dark green; leaves are both awl and scale shaped; cone is a dark blue and berry-like.
Juniperus virginiana
Eastern Red Cedar

leaves are all awl shaped; cone is dark blue and berry-like.
Juniperus communis
Common Juniper

PART B

needles are flat and without stalks and the cones occur upright on the branches.

needles are blunt at the tip and are 3/4 - 1½ inches long.
Abies balsamea
Balsam Fir

needles are pointed at the tip and 1½ - 3 inches long.
Abies concolor
White Fir

needles occur in multiple bundles or tufts

many needles (7-24) occuring on spur-like tufts; needles fall in winter.
Larix sp.
Larches and Tamaracks

needles in multiple bundles (2-5 per bundle)

needles in bundles of 2

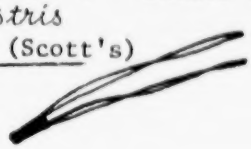
needles in bundles of 3 or more

needles are 4-6 inches long
(for longer needles see Ponderosa Pine.)

needles are 3/4 - 3 inches long and twisted

needles are thin and brittle; needle snaps when bent.
Pinus resinosa
Red Pine

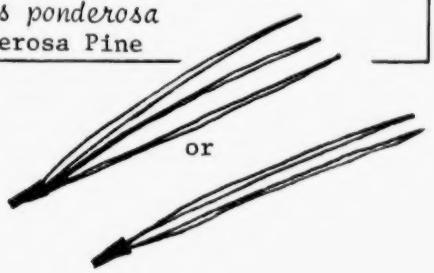
old bark is orange and scaly; needles are 1½ - 3 inches long.
Pinus sylvestris
Scotch Pine (Scott's)



needles are thick and stiff; needle folds when bent.
Pinus nigra
Austrian Pine

cone tips curve toward branch tips; needles are 3/4 - 1½ inches long.
Pinus banksiana
Jack Pine

needles in bundles of 3 (rarely 2); needles are 4-11 inches long and yellowish-green in color.
Pinus ponderosa
Ponderosa Pine



needles are in bundles of 5; needles are 2-4 inches long.
Pinus strobus
White Pine

Needles are round or square in cross section, occurring on raised pegs on the branches and cones hang from branches.

- cones have 3-pointed bracts sticking out between the cone scales; needles are 3/4 - 1¼ inches long.
  Pseudotsuga menziesii
  Douglas Fir

cone

- cones have no bracts sticking out.
  - needles are sharp to touch
    - needles are 1-1½ inches long; blue-green in color; cone is 2½ - 4½ inches long.
      Picea pungens
      Colorado Blue Spruce
    - needles are ½ - 3/4 inches long; needles are dark green with a whitish tint; cone is 1 - 2½ inches long.
      Picea glauca
      White Spruce
  - needles are blunt to touch
    - needles are ¼ - 3/4 inches long; cones are ½ - 1½ inches long.
      Picea mariana
      Black Spruce
    - needles are ½ - 3/4 inches long; cone is 4-7 inches long; foliage appears to droop.
      Picea abies
      Norway Spruce

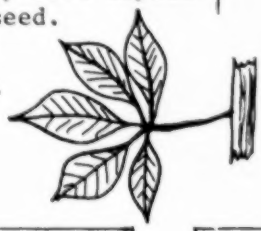
PART A

compound opposite leaves

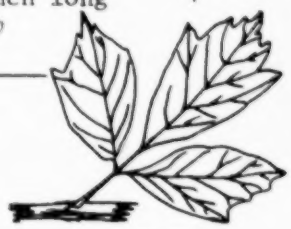
5 or more leaflets in a palmately arranged leaf

3 or more leaflets in a pinnately arranged leaf

5 leaflets with the fruit being a spiny, leathery seed capsule with one brown seed.
Aesculus glabra
Ohio Buckeye

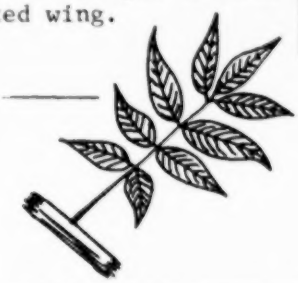


3 leaflets and double samaras ½ inch long
Acer negundo
Boxelder



7 leaflets with the fruit being a short-spined leathery seed capsule with 1 or more brown seeds.
Aesculus hippocastanum
Horse-chestnut

5 or more leaflets and single samaras with an elongated wing.
Fraxinus sp.
Ashes



PART B

compound alternate leaves

branches and/or twigs have spines or thorns

½ inch long spines or thorns occur at the compound leaf base. (Spines may be absent)
Robinia pseudoacacia
Black Locust

2-8 inch long thorns that are branched and attached on the stem and twigs; leaves may be doubly or singly pinnately compound. (Thorns may be absent)
Gleditsia triacanthos
Honey Locust

PART A

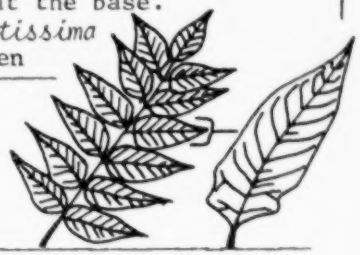
compound alternate leaves

leaflet margins are smooth for almost the entire length

leaves are doubly pinnately compound with 40 or more leaflets; leaf is 1-3 feet long.
Gymnocladus dioicus
Kentucky Coffee Tree

seed pod

leaves are singly pinnately compound with 13 to 39 leaflets; the leaflet margin is smooth except for 1-2 gland teeth at the base.
Ailanthus altissima
Tree of Heaven



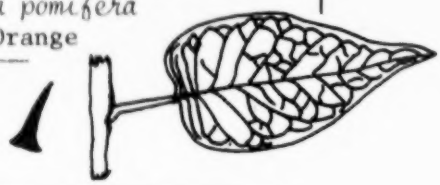
PART B

simple leaves

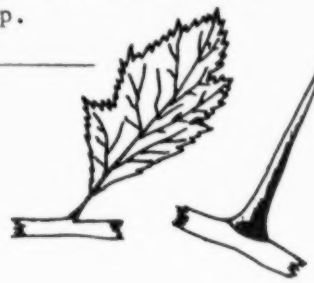
branches and or twigs have spines or thorns that are sharply pointed

leaf margin is smooth

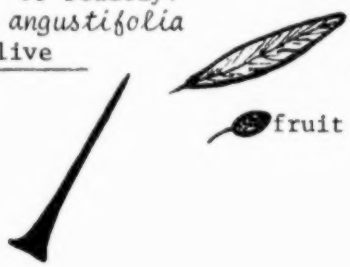
Leaf is 3-5 inches long with a long pointed tip; thorns are straight and ½ inch long.
Maclura pomifera
Osage Orange



leaf margin is coarsely doubly toothed; stiff, sharp unbranched thorns.
Crataegus sp.
Hawthorns



long spines or thorns; leaf is long and narrow; leaf is silvery colored and scurfy or scalely.
Elaeagnus angustifolia
Russian Olive



fruit

compound alternate leaves

leaflet margins are toothed

leaf 6-8 inches long; 7-17 leaflets; berry-like, orange-red fruit.
Sorbus americana
Mt. Ash

tree with no orange-red berries.

5-14 leaflets; fruit husk in 4-6 parts. Pith is not chambered.

11-23 leaflets; fruit is a nut covered by a fleshy shell without cracks or ribs. Pith is chambered.

5 leaflets

7 or more leaflets

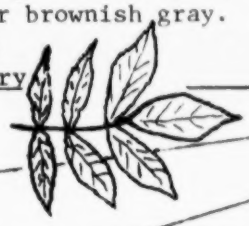
fruit husk is thick (¼ inch); leaf is 8-14 inches long; bark is smooth when young and shaggy when old.
Carya ovata
Shagbark Hickory

leaf is shorter than 15 inches

leaf is 6-9 inches long; nut husk is thin; 7-11 leaflets; buds are colored a sulfur yellow.
Carya cordiformis
Bitternut Hickory

can have 5, 7, or 9 leaflets; fruit husk is thick (¼-½ inch); leaf is 15-22 inches long; leaf is hairy below; nut husk has 4-6 ribs; old bark is shaggy; twigs are orange-brown.
Carya laciniosa
Shellbark Hickory

leaf is 9-14 inches long; nut husk is thick; 7-9 leaflets; leaflets are hairy below; twigs are hairy and reddish-brown or brownish gray.
Carya tomentosa
Mockernut Hickory



round nut; leaf has 15-23 leaflets; the terminal leaflet is usually absent; bark is dark brown to nearly black. Pith of twigs is tan in color.
Juglans nigra
Black Walnut

oval nut; leaf has 11-17 leaflets; the terminal leaflet is present; bark is light gray. Pith of twigs is dark chocolate brown.
Juglans cinerea
Butternut

PART A

simple opposite leaves

smooth leaf margins

leaves are 3-6 inches long; veins run parallel to the leaf margin; midvein contains fine white strands of fibers when leaf is pulled apart.
Cornus sp.
Dogwood

leaves are 8-12 inches long; leaf is heart shaped; fruit is long pod 8-20 inches long.
Catalpa speciosa
Catalpa

PART B

simple alternate leaves

smooth leaf margins

heart shaped leaf; tip is pointed; fruit is a legume seed pod 2-3½ inches long and thin.
Cercis occidentalis
Redbud

fruit is an acorn; buds are bunched at the end of the twigs; leaves are oval and 4-6 inches long.
Quercus imbricaria
Shingle Oak

PART C

simple opposite leaves

leaves have 3 main lobes

lobe sinuses are sharp angled; lobe margins are toothed; samara is V-shaped.
Acer rubrum
Red Maple

lobe sinuses are rounded; bark is blackish; samaras are U-shaped.
Acer nigrum
Black Maple

PART A

simple opposite leaves

leaves have 5 or more lobes (if the two basal lobes are small, check the 3-lobe key on page 7-C)

lobes are coarsely toothed; samaras are V-shaped; sinuses are sharp angled; 5 deep lobes.
Acer saccharinum
Silver Maple

lobe margins are smooth and entire.

5 lobes with rounded sinuses; samara is U-shaped.
Acer saccharum
Sugar Maple

5-7 lobes with rounded sinuses; samara blades split apart very wide; leaf petiole is red.
Acer platanoides
Norway Maple

PART B

simple alternate leaves

lobe tips are rounded

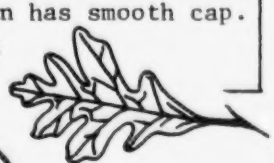
leaf undersides and twigs are white and hairy; 3-5 lobes; leaves dark green above.
Populus alba
White Poplar

leaf undersides are green, not white and hairy; fruit is an acorn.

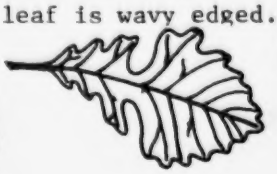
acorn is oblong; lobes are irregular.
Quercus bicolor
Swamp White Oak

acorn is generally spherical; 5-9 lobes.

7-9 lobes; acorn has smooth cap.
Quercus alba
White Oak



5-9 lobes; acorn has rough and hairy cap; basal leaf portion has lobes and tip portion of leaf is wavy edged.
Quercus macrocarpa
Bur Oak



simple alternate leaves

lobe tips are pointed

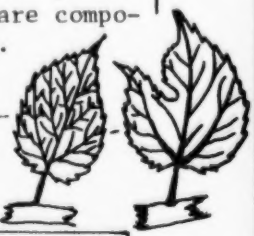
cream or white-colored branches, twigs, and leaves; tree bark may have a mottled appearance.

leaf undersides and twigs are white and hairy; leaves are 3-5 lobed;
Populus alba
White Poplar

leaves are 3-5 lobed with lobe margins coarsely toothed; fruit is hairy ball of seeds 1-1¼ inches in diameter; bark is scaly with the inner-bark light colored to almost white; trunk appears mottled.
Platanus occidentalis
Sycamore

leaf, twig and branches do not show white colored bark or hair.

lobe margins are coarsely toothed and may or may not be lobed; fruits are composite fleshy seeds.
Morus sp.
Mulberry



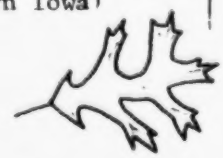
lobe margins are generally smooth

leaf has 4 lobes; leaf is 4-6 inches long; leaf tip is flat or notched; fruit is a cone-like group of samaras.
Liriodendron tulipifera
Yellow Poplar

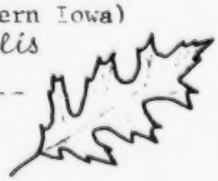
fruit is an acorn; more than 4 lobes present

lobe sinuses stretch almost to the leaf mid-vein; vein crotches have hair on the leaf underside.

acorn is round with the cap covering 1/3 or less. (Southern Iowa)
Quercus palustris
Pin Oak



acorn is oval with cap covering almost ½ the acorn. (Northern Iowa)
Quercus ellipsoidalis
Northern Pin Oak



lobe sinuses stretch ½ way to the midvein.

7-11 lobes; leaf is green below; small cap on large acorn.
Quercus rubra
Northern Red Oak

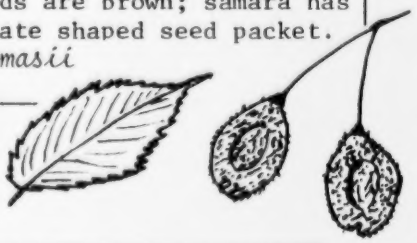
5-7 lobes; leaf is coppery colored below; sinuses are broad; small acorn with a small cap.
Quercus velutina
Black Oak

simple alternate leaves ; double toothed margin

leaf base is unequal across the midvein; leaf base is unsymmetrical.

leaves are 2½-4 inches long

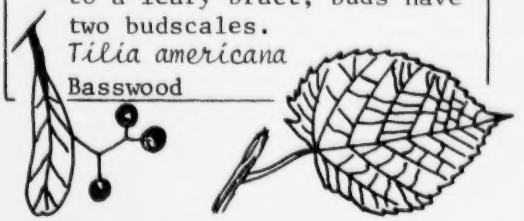
leaf is smooth above, hairy below; twigs may have corky growths or wings; buds are brown; samara has a indefinate shaped seed packet.
Ulmus thomasii
Rock Elm



leaf has a long pointed tip; bark has warty or corky ridges or growths.
Celtis occidentalis
Hackberry

leaves are 4-6 inches long

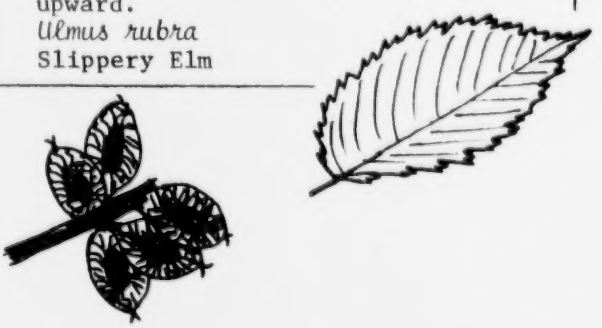
leaf is heart shaped; flowers are on a long stalk attached to a leafy bract; buds have two budscales.
Tilia americana
Basswood



leaf is not heart shaped

leaf is 4-6 inches long and 1-3 inches wide; buds are brown; twigs tend to droop; leaf is hairy beneath.
Ulmus americana
American Elm

leaf is 5-7 inches long and 2-3 inches wide; leaf is very rough above and hairy below; twigs tend to grow upward.
Ulmus rubra
Slippery Elm



simple alternate leaves; double toothed margins

leaf base is equal across the mid-vein; the leaf base is symmetrical.

bark peels horizontally and is reddish-yellow to white colored; bark separates into papery plates.

bark is white and papery; inner bark is orange; leaf petiole is black.
Betula papyrifera
Paper Birch

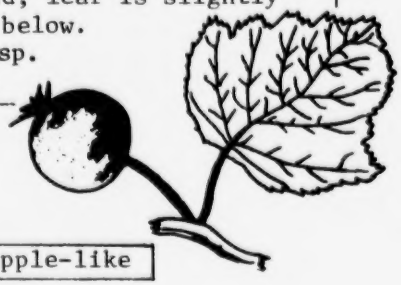
bark is brown to bronze

found in southern Iowa; leaf base is wedged shaped; bark is reddish-brown and scaly.
Betula nigra
River Birch

found in northern Iowa; bark is dirty yellow to bronze; twigs have wintergreen smell and taste; leaf petiole is hairy.
Betula alleghaniensis
Yellow Birch

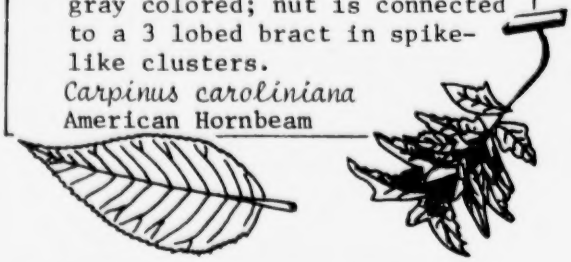
bark is smooth to coarse with no large papery plates.

fruit is an apple; some blunt spurs occur on the branches; can be singly or doubly toothed; leaf is slightly hairy below.
Malus sp.
Apples



fruit is not apple-like

bark is thin, smooth and blue-gray colored; nut is connected to a 3 lobed bract in spike-like clusters.
Carpinus caroliniana
American Hornbeam

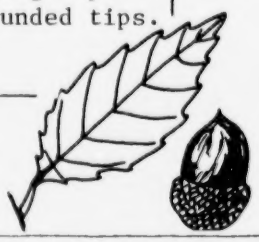


bark is rough; nut is enclosed in a bladder-like sack, borne in clusters.
Ostrya virginiana
Ironwood

PART A

simple alternate leaves ; toothed margin

fruit is an acorn; buds are bunched at the twig tips
leaf margins are coarsely toothed with rounded tips.
Quercus muehlenbergii
Chinkapin Oak



PART B

simple alternate leaves; toothed margins

leaves are long and thin; length is more than 4 times the width.

buds have a single bud scale or covering;
leaf has widely spaced marginal teeth;
leaf is very narrow (¼-3/8 inches wide);
shrubby species.
Salix interior
Sandbar Willow

buds have a single bud scale or covering;
leaf has finely toothed margins;
leaf is narrow (3/8-3/4 inches wide).
Salix nigra
Black Willow

PART C

simple alternate leaves ; singly toothed margin

leaf is broad triangle shaped or oval with the length not more than 2½ times the width.

leaves are triangle shaped or as broad as wide (circular shape)

top portions of the tree has whitish or yellowish bark while the bottom portion has brown furrowed bark.

1 2 3

leaves are generally oval or oblong shaped.

fruit is ½ inch in diameter or larger.

4 5 6

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buds are resinous; leaves triangle shaped; leaf is coarsely toothed.
Populus deltoides
Eastern Cottonwood

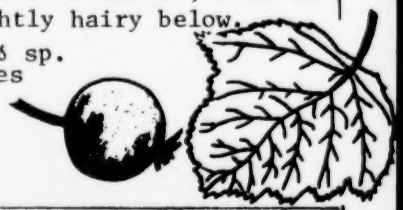
buds are not resinous

leaf is 2-5 inches long with a flattened petiole; buds stick out from the twig and are dusty-gray colored; leaf is coarsely toothed.
Populus grandidentata
Bigtooth Aspen

leaf is 1½-3 inches long; buds are incurved against the twig; leaf is finely toothed.
Populus tremuloides
Quaking Aspen

top of the tree is not whitish; leaves may have lobes; broad leaf with a compound fleshy fruit.
Morus sp.
Mulberry

shrubby tree with apple-like fruit; spur-like stubs may exist on branches; leaf is slightly hairy below.
Malus sp.
Apples



shrubby tree with 1 inch diameter, green to purple fruit; fruit has a crease down one side; twigs are stubby, spur-like and sometimes spiny tipped; leaf has long pointed tip; leaf is 3-4 inches long.
Prunus americana
Plum

fruit is less than ½ inch in diameter

leaves are hairy when young; 2-4 inches long; bark is smooth gray with dark lines in it; shrubby tree.
Amelanchier arborea
Juneberry

tree has spikes of fleshy fruit; bark is dark colored

leaf is finely toothed with teeth that incurve toward the leaf; red-brown hairs are along the basal area of the mid-vein; fruit is black when ripe; old bark is black and has platy scales; leaves are thick and waxy.
Prunus serotina
Black Cherry

leaf is finely toothed with outward curved teeth; fruit is red when ripe; bark is brownish and smooth; leaves are thin.
Prunus virginiana
Chokecherry

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